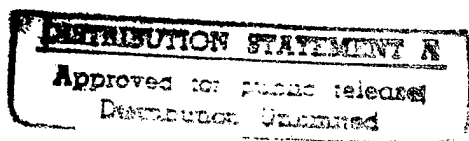


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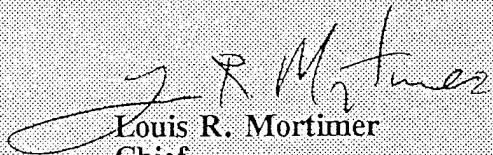
*Peter R. Blood
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PREFACE

This bibliography provides selective annotations of open-source material on two current issues:

--nuclear developments in South Asia, and

--tactics and organization of the Afghan resistance

The bibliography incorporates serials and monographs received in the previous month and is part of a continuing series on the above subjects.

Entries within each topic are arranged alphabetically by author or title. Call numbers for materials available in the Library of Congress are included to facilitate recovery of works cited.

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1. NUCLEAR DEVELOPMENTS IN SOUTH ASIA

GLOSSARY OF TERMS

AEMC	The Atomic Energy Minerals Center at Lahore is responsible for finding and recovering uranium ore, thereby tilling a vital need stemming from boycotts of Pakistan by international nuclear fuel suppliers.
BARC	Bhabha Atomic Research Centre is located in north Bombay and is India's facility for research in and development of nuclear technology.
CHASHNUPP	Pakistan's Chashma Nuclear Power Plant, a projected 900-megawatt facility in Mianwali District, Punjab, was sanctioned in 1982 in order to create electrical power through light-water technology.
Cirus	A Candu-type Canadian-built plant located at BARC, Cirus was commissioned in 1960. India reprocessed spent fuel from Cirus to make the plutonium for its 1974 "peaceful nuclear explosion;" Cirus has a capacity of 40 megawatts.
Dhruva	One of the world's few high-flux reactors, Dhruva, which went critical in August 1985, is solely the product of Indian research and production, and therefore, falls completely outside IAEA safeguards. Dhruva shares facilities with Cirus, its neighbor in the BARC, has a 100-megawatt capacity, and can produce 30 kg of plutonium annually.
IAEA	International Atomic Energy Agency (United Nations)
Kalpakkam	This Tamil Nadu town is the site of the Indira Gandhi Atomic Research Center (formerly MAPP) and gives its name to a 40-megawatt fast-breeder reactor which went critical in August 1985 using plutonium-uranium carbide fuel.

KANUPP	Karachi Nuclear Power Plant, a 125-megawatt reactor, was supplied by Canada on a turnkey basis and became operational in 1972.
MAPP-1	Madras Atomic Power Project's first Candu-type 235-megawatt unit was commissioned in January 1984. The center is located at Kalpakkam, Tamil Nadu, and was produced completely by Indian research and technology; consequently, its units and the plutonium they produce fall outside IAEA inspection safeguards. MAPP units are intended to provide electricity for Madras. In October 1985, MAPP was renamed the Indira Gandhi Atomic Research Center, but new names for individual plants have not been made public.
MAPP-2	The second unit at Madras Atomic Power Project is also a Candu-type 235-megawatt plutonium and heavy-water reactor. MAPP-2 went critical in August 1985 and was commissioned in October of the same year.
NPT	The Nuclear Nonproliferation Treaty was ratified by the UN General Assembly in 1968. India and Pakistan contend that the NPT discriminates against nonnuclear states, but Pakistan has repeatedly offered to sign if India will do so simultaneously. In the UNGA, Islamabad voted in favor of the NPT.
PAEC	Pakistan Atomic Energy Commission
PINSTECH	Pakistan Institute of Nuclear Science Technology, the site of a US-supplied 5-megawatt "swimming pool"-type reactor installed in the 1960s
Tarapur	The Tarapur nuclear power plant, located near Bombay, was built by the United States. It has a capacity of 600 megawatts and can annually produce 50 to 80 kg of plutonium. Tarapur and its products come under IAEA inspection safeguards.

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"Attempt Revealed To Export To Pakistan HEU-Capable Components." Nucleonics Week (New York), vol. 28, no. 19, 7 May 1987, pp. 5-6.

A senior Swiss official announces that components destined for Pakistan and seized by Swiss customs officials in 1986 were clearly designed to enrich uranium well above the 3 percent level necessary for power generation. The components were found on the premises of Metallwerke Buchs AG (MBW), a Swiss machinery maker, and included autoclaves, type-48-X steel containers, and type CB-AD-1 desublimers. According to German nuclear experts, the diameter of the desublimers tubes could provide an immediate indication of the level of enrichment for which they were designed (with higher enrichment requiring narrower or flatter tubes). Along with the seized components, Swiss authorities found a set of stolen blueprints for Urenco's newest enrichment plant in Gronau, West Germany. The Cologne-based firm Leybold-Heraeus GmbH is believed to have organized the sale to Pakistan and is currently under investigation.

"Bihar Lobbying For Atomic Power Plants." Times of India (Bombay), 26 January 1987, p. 23. In JPRS-TND-87-007, 2 April 1987, p. 40.

The Indian Department of Atomic Energy (DAE) has commissioned Roorkee University to conduct a detailed geological and seismic study of two proposed sites for the construction of two 1,000-MW atomic power plants. The sites, Jharua near Chandil and Baradih in Rohtas district, have already met the four basic criteria set by the DAE: availability of water, availability of land, proximity to the electrical load center, and general suitability of site.

"DAE Unveils Plan To Handle N-Accidents." Hindu (Madras), 25 May 1987, n.p.

The Reactor Safety Analysis Group of the Indian Department of Atomic Energy announces an emergency plan to protect civilians in the event of a nuclear accident. In a report published in late May, the group identified five different

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categories of emergency divided according to the severity of the accident and the extent of contamination beyond the nuclear facility. Present regulations prohibit public habitation within 1.6 kilometers of the plant (exclusion zone) and forbid public activities within 5 kilometers (sterilized zone). In an actual accident, people living within the sterilized zone would be advised to take iodine tablets and to remain indoors for several weeks.

The report also identifies the primary safety features installed in Indian nuclear reactors, including core cooling systems and rapid shut-down systems.

"France Offers Pakistan Nuclear Plant In Reprocessing Dispute Talks." Nucleonics Week (New York), vol. 28, no. 20, 14 May 1987, pp. 1, 8-9.

The French Government may assist Pakistan in building a nuclear power plant as part of a settlement of a 10-year old contract dispute. The Arbitration Court of the International Chamber of Commerce recently ordered France to pay the Pakistan Atomic Energy Commission (PAEC) \$300 million in damages stemming from France's unilateral withdrawal from a reprocessing plant contract in 1977. In negotiations with PAEC, the French have offered to honor their commitment by assisting with the construction of a proposed 900-MW nuclear plant in Chashma. Other Western countries have been unwilling to participate in this project because of Pakistan's refusal to sign the Non-Proliferation Treaty. A spokesman for the French Government reports that the proposed agreement would be trilateral, with the IAEA as one of the signatories.

"Indian Nuclear Reactors Have Inherent Safety Features: Study." Patriot (New Delhi), 14 May 1987, p. 5.

The Nuclear Power Board of the Indian Department of Atomic Energy recently released a report entitled "Safety of the Indian Pressurised Heavy Water Reactors," the nation's first detailed study of the safety of its dominant reactor technology. The study focuses on major aspects of reactor

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operation, including fuel, reactivity, regulation, moderators and primary heat transport. It examines those safety features intrinsic to Pressurized Heavy Water Reactors (including the low thermal conductivity and high specific heat of uranium dioxide), as well as those specially engineered into the nation's power plants (including the use of short fuel bundles and reactivity control devices).

Aside from the two 210-MW units in Tarapur, which are boiling water reactors, India's reactors all depend on pressurized heavy water technology. The four 235-MW reactors currently under construction at Narora and Kakrapar supplement this technology with significant design changes which will also be incorporated into the 500-MW reactors scheduled for construction in the 1990s. The report concludes that India's nuclear technology is highly reliable and ensures the safety of the plant personnel, the surrounding population and the environment.

"India's First Robot For Nuclear Plants." Patriot (New Delhi), 14 May 1987, p. 5.

Scientists at the Bhabha Atomic Research Center (BARC) have developed a mobile robot designed to perform repair work in hazardous, highly radioactive environments. Described as a six-legged walking machine, India's first robot is expected to begin work in the second half of 1987 and will be used for a variety of functions, including the dismantling and reconstitution of irradiated fuel in fast-breeder reactors. The robot is driven by AC motors and is able to lift up to 5 kilograms.

"New Chief For BARC Heavy Water Dept." Times of India (Bombay), 2 May 1987, p. 5.

Mr. S.M. Sundaram, 55, has been appointed Chief Executive of the Heavy Water Projects in the Department of Atomic Energy. He was previously Director of the Reactor Operations and Maintenance Group at BARC. He joined the department in 1956 and has been involved with both the

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Cirus and Dhruva research reactors. He also served as the leader of a team which evaluated the use of 500-MW heavy water reactors.

"RAPS-I Put Back Into Operation." Hindu (Madras), 23 May 1987, p. 1.

Unit I of the Rajasthan Atomic Power Station (RAPS-I) was put back into operation on 22 May 1987 after a 2-year period of inactivity. The 235-MW unit was shut down in 1981 after cracks were detected in the end shield. Partially successful repair efforts permitted brief periods of operation in 1982 and again in 1985. RAPS-I will be run on low power (30 MW) during a trial period to determine the effectiveness of the most recent repairs.

Reddy, G.K. "Pakistan Military Appointment Reveals Nuclear Policy." Hindu (Madras), 19 March 1987, p. 9. In JPRS-NEA-87-056, 15 May 1987, p. 39.

General Akhtar Abdul Rahman Khan, newly appointed Chairman of the Pakistan Joint Chiefs of Staff Committee, is believed to have played a major role in the nation's efforts to make an atomic bomb. His appointment is therefore viewed in India as a sign that the Pakistani Government is fully committed to the development of a nuclear weapons capability and is attempting to coordinate the efforts of the army and the nuclear weapons establishment.

In his previous position as Chief of Military Intelligence, General Khan was responsible for the security of the Kahuta enrichment plant and other nuclear facilities and is likely to have worked closely with Dr. Abdul Qader Khan, the director of the Pakistani effort to develop nuclear weapons.

Vaidyanathan, Lalitha. "How Long Will 'Apsara' Last?" Patriot (New Delhi), 23 May 1987, p. 4.

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P.K. Iyengar, Director of BARC, announces that the Apsara research reactor will not be decommissioned this year. After examining the reactor's record of safe and relatively trouble-free operation, a committee of nuclear scientists recommended that the decommissioning be delayed indefinitely.

Apsara went critical in 1956, when it was the first non-Soviet research reactor in Asia. It remains the only "swimming pool" reactor in the Indian inventory (an enriched uranium/light water reactor, so named because of the open pool of water in which the uranium core is immersed). Apsara continues to produce components of phosphorus-32 and other materials useful for biomedical and agricultural research.

2. TACTICS AND ORGANIZATION OF THE AFGHAN RESISTANCE

GLOSSARY OF TERMS

Commander	A resistance fighter who is recognized as a military leader in local or regional areas of conflict; some commanders are respected outside their own regions, but there is not yet a coordinated, nationwide, insurgent command in Afghanistan. The title commander is the only honorific or rank recognized by the resistance movement.
Dushmani	(singular: <u>dushman</u>) Soviet pejorative term for Afghan insurgents; it means "bandit" and originated during the 1930s Central Asia resistance.
DRA	The Democratic Republic of Afghanistan was established as the result of a coup led by Mohammad Nur Taraki and Hafizullah Amin in April 1978. Deteriorating internal security led to military intervention by the Soviet Union in December 1979 and Amin was killed by the invading troops. The Soviet invasion transformed armed resistance toward the modernistic but arbitrary reforms of Taraki and Amin into a war of national liberation.
KHAD	DRA intelligence service whose operations are entirely directed by its many Soviet KGB advisors. The acronym stands for Khedmat-Etala'at-e-Daulati (State Information Service). KHAD received ministerial rank in January 1986.
Mujahideen	(singular: <u>mujahid</u>) This Islamic term means "holy warrior," but it is most often used as a name for Afghanistan's resistance fighters, who consider their campaign a <u>jiha</u> d (holy war) to drive unbelievers from their country.
Spetznaz	Soviet special warfare troops under the GRU (Military Intelligence Directorate) of the Soviet Ministry of Defense. These highly mobile units are deployed throughout Afghanistan for operations which require more skill or loyalty than is commonly displayed by Soviet or DRA troops.

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Adam, Farooq. "The Stinger Effect." Muslim (Islamabad), 23 June 1987, p. 4.

The author, a Pakistani journalist, travelled through 7 provinces on his 22-day excursion into Afghanistan. He was especially impressed that his mujahideen guides displayed no fear of attack from the air. The few jets and helicopters he saw were flying at heights which prevented them from accomplishing their missions. The author calls the combination of new Soviet ineffectiveness in the air and the resultant lift in mujahideen morale and confidence the "Stinger Effect." This effect, he exclaims, produced by the effective use of the Stinger weapon by the resistance, is the most important development of the war.

"Afghanistan to Allow Soviet-Linked Parties." Washington Post, 6 July 1987, p. A14.

Radio Kabul announced that the Revolutionary Council presidium will soon issue rules for the formation and registration of new parties. These parties would have to support an independent, nonaligned Afghanistan and the "consolidation" of the historic friendship with the Soviet Union.

"China Supports Afghan People Struggle for Independence." Pakistan Times (Lahore), 24 June 1987, p. 1.

In a ceremony held in Islamabad, the Vice-Foreign Minister of the People's Republic of China, Mr. Qian Qichan, announced the delivery of new relief goods to Afghan refugees. The Vice-Foreign Minister said his countrymen were concerned over the continuing genocide in Afghanistan and were happy to be able to contribute to the welfare of the refugees. The Chinese contribution included 1,250 tons of rice, 30 trucks, one million yards of cotton and 200,000 pairs of shoes.

"Democratic Dropped From Afghanistan's Name." Muslim (Islamabad), 29 June 1987, p. 8.

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Afghan leader, Najibullah, announced that Afghanistan's name will be shortened from the Democratic Republic of Afghanistan (DRA) to the Republic of Afghanistan. He also said that this name change will be incorporated in the country's new constitution soon to be promulgated. Various leaders in the resistance were quick to characterize this change as immaterial and simply a cloak to hide the DRA's close affiliation with the Soviet Union.

Majrough, Sayd B. "Sceptique Comme un Afghan." L'Express International (Paris), Vol. 1871, 22 May 1987, p. 38.

The author compares Gorbachev's attitude toward the Afghan war with those of his predecessors. Breshnev justified his decision to invade Afghanistan on the basis of defending the revolution against imperialism and hoped the Soviet "internationalist duty" there would be of short duration. Andropov relied on a strategy of subversion. The Chernenko period witnessed the construction of large Soviet bases in strategic areas and the introduction of special "spetsnaz" forces. Gorbachev has been active on all fronts, military and diplomatic. The author ponders whether Gorbachev is sincere in his peace initiative, and says that Afghanistan has become a "litmus test" of the Soviet leader's credibility.

Weintraub, Richard M., and Ottaway, David B. "Afghan Rebels Said to Hit Foe Hard." Washington Post, 16 July 1987, p. A1, A14.

Despite Moscow's recent proclamation that it wants a political settlement to the Afghan war, the Soviet war effort has greatly intensified. The Soviets have recently lost a large number of their elite troops in an effort to occupy guerrilla supply routes in eastern Afghanistan. The recent Soviet military escalation was an important factor in the US Administration's decision to send Stingers to the insurgents. An initial shipment of 150 Stingers last year has been augmented by another 600 this year. U.S. military analysts have been surprised that the Soviets, who are said to be losing an average of 1 aircraft a day to these

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sophisticated weapons, have not yet devised effective counter-measures.